

U.S. Serial No. 10/697,370
Amendment Dated January 18, 2005
Response To Office Action Dated October 18, 2004

Amendments to the Specification

Please replace the paragraph beginning at page 1, line 19 with the following paragraph:

Typically, turbine vanes are formed from an elongated portion forming a vane having one end configured to be coupled to a vane carrier and an opposite end configured to be movably coupled to a manifold. The vane is ordinarily composed of a leading edge, a trailing edge, a suction side, and a pressure side. The inner aspects of most turbine vanes typically contain an intricate maze of cooling circuits forming a cooling system. The cooling circuits in the vanes receive air from the compressor of the turbine engine and pass the air through the ends of the vane adapted to be coupled to the vane carrier. The cooling circuits often include multiple flow paths that are designed to maintain all aspects of the turbine vane at a relatively uniform temperature. At least some of the air passing through these cooling circuits is exhausted through orifices in the leading edge, ~~trailing~~ trailing edge, suction side, and pressure side of the vane. A ~~substantially~~ substantial portion of the air is passed into a manifold to which the vane is ~~moveable~~ movably coupled. The air supplied to the manifold may be used, among other uses, to cool turbine blade assemblies coupled to the manifold. While advances have been made in the cooling systems in turbine vanes, a need still exists

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for a turbine vane having increased cooling efficiency for dissipating heat and passing a sufficient amount of cooling air through the vane and into the manifold.

Please replace the paragraph beginning at page 5, line 9 with the following paragraph:

The leading edge cavity 18 may be defined by the metering rib 14 and inside surfaces forming the leading edge 34 and the housing 26 of the airfoil 22. The leading edge cavity 18 may include a plurality of ribs 56 forming a plurality of leading edge cooling paths 58. In at least one embodiment, three leading edge cooling paths 58 may be formed. In ~~other~~ another embodiment, other numbers of cooling paths 58 may be used. Each leading edge cooling path 58 may have one or more metering orifices 16 positioned relative to the ribs 56 to provide a pathway for cooling fluids to flow into each respective cooling path 58.

Please replace the paragraph beginning at page 6, line 23 with the following paragraph:

During operation, a cooling fluid flows into the inlet orifice 48 in the serpentine cooling path 42 and into the first inflow section 44. At least a portion of the cooling fluid flows through the serpentine cooling path 42, removes heat from the housing 26 and other components of the serpentine cooling path 42, and is discharged through the exhaust orifices

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32 54. The other portion of the cooling fluid flows through the metering orifices 16 and into the leading edge cavity 18. The cooling fluid passes through the leading edge cooling paths 58 and removes heat from the housing 26, metering rib 14, ribs 56, and other components forming the turbine vane 10.

Please replace the paragraph beginning at page 6, line 31 with the following paragraph:

In at least one embodiment, a small portion of the cooling fluid entering the inlet orifice 48 flows through the serpentine cooling path 42 and is discharged through the exhaust orifices 32 54. The remainder of the air is bled from the first inflow section 44 through the metering orifices 16 into the plurality of leading edge cooling paths 58 at a selected pressure and flow rate. The cooling fluid flows through the leading edge cavity 18 and is discharged into a manifold assembly 41 to provide cooling for downstream components. This configuration prevents the potential of overflow of the manifold cooling system, and thus, minimizes starvation of the trailing edge cavity 20 and serpentine cooling path 42 and minimizes overheating of the airfoil 26.

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